We Claim:

1. A disposable glucose test strip for use in a test meter of the type which receives a disposable test strip and a sample of blood from a patient and performs an electrochemical analysis of the amount of glucose in the sample, comprising:

(a) a substrate;

(b) a reference electrode;

(c) a working electrode, said working electrode comprising a conductive base layer disposed on the substrate and a first working coating disposed over the conductive base layer, said first working coating comprising a filler having both hydrophobic and hydrophilic surface regions such that it forms a network upon drying, an enzyme effective to oxidize glucose, and a mediator effective to transfer electrons from the enzyme to the conductive base layer; and

(d) means for making an electrical connection between the reference and working electrode and a glucose test meter.

2. The test strip of claim 1, wherein the working layer is non-conductive.

3. The test strip of claim 2, wherein the filler is silica.

4. The test strip of claim 3, wherein the conductive base layer comprises conductive carbon.

5. The test strip of claim 3, wherein the enzyme is glucose oxidase.

6. The test strip according to claim 3, wherein the mediator is ferricyanide.

7. The test strip of claim 3, wherein the first working layer is formed from an aqueous composition comprising weight 2 to 10 % by weight of a binder 3 to 10 % by weight of silica; 8 to 20 % by weight of a mediator; and 1000 to 5000 units per gram of the aqueous composition of an enzyme for oxidizing glucose.

Sub a1

8. The test strip of claim 3, wherein the silica is Cab-o-Sil TS610.

9. The test strip of claim 8, wherein the conductive base layer comprises conductive carbon.

10. The test strip of claim 8, wherein the enzyme is glucose oxidase.

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11. The test strip of claim 8, wherein the mediator is ferricyanide.

12. The test strip of claim 8, wherein the first working layer is formed from an aqueous composition comprising weight 2 to 10 % by weight of a binder 3 to 10 % by weight of silica; 8 to 20 % by weight of a mediator; and 1000 to 5000 units per gram of the aqueous composition of an enzyme for oxidizing glucose.

13. The test strip of claim 3, further comprising a second working layer comprising silica, a binder and a mediator but no glucose-oxidizing enzyme.

14. The test strip of claim 3, further comprising a second working layer comprising silica and a binder but no glucose-oxidizing enzyme.

15. The test strip of claim 1, further comprising a second working layer comprising a filler, a binder and a mediator but no glucose-oxidizing enzyme.

16. The test strip of claim 1, further comprising a second working layer comprising a filler and a binder but no glucose-oxidizing enzyme.

17. An aqueous composition comprising a binder, a silica filler having both hydrophobic and hydrophilic surface regions, at least one of an enzyme effective to oxidize glucose and an electron transfer mediator.

18. The composition of claim 17, wherein the filler is non-conductive.

~~19. The composition of claim 18, wherein the filler is silica.~~

~~20~~ 19. An aqueous composition comprising 2 to 10 % by weight of a binder; 3 to 10 % by weight of silica; 8 to 20 % by weight of a mediator; and 1000 to 5000 units per gram of the aqueous composition of an enzyme for oxidizing glucose.

~~21~~ 20. The composition of claim ~~20~~ 19, wherein the silica has both hydrophobic and hydrophilic surface regions.

~~22~~ 21. The composition of claim ~~21~~ 20, wherein the binder is hydroxyethylcellulose.

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22 ~~23~~. The composition of claim 19 ~~20~~, wherein the enzyme is glucose oxidase.

23 ~~24~~. The composition of claim 19 ~~20~~, wherein the mediator is ferricyanide.

24 ~~25~~. A method for making a disposable test strip for the electrochemical detection of glucose, comprising the steps of:

(a) applying working and reference electrode tracks to a substrate;

(b) applying a conductive base layer in contact with the working electrode track; and

(c) applying a working layer over the conductive base layer, wherein the working layer comprising a filler having both hydrophobic and hydrophilic surface regions such that it forms a network upon drying, an enzyme effective to oxidize glucose, and a mediator effective to transfer electrons from the enzyme to the conductive base layer.

25 ~~26~~. The method of claim 24 ~~25~~, wherein the filler is non-conductive.

26 ~~27~~. The method of claim 25 ~~26~~, wherein the filler is silica.

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27 ~~28~~. The method of claim 26 ~~27~~, wherein the conductive base layer comprises conductive carbon.

28 ~~29~~. The method of claim 26 ~~27~~, wherein the enzyme is glucose oxidase.

29 ~~30~~. The method of claim 26 ~~27~~, wherein the mediator is ferricyanide.

30 ~~31~~. The method of claim 26 ~~27~~, wherein the first working layer is formed from an aqueous composition comprising weight 2 to 10 % by weight of a binder 3 to 10 % by weight of silica; 8 to 20 % by weight of a mediator; and 1000 to 5000 units per gram of the aqueous composition of an enzyme for oxidizing glucose.

31 ~~32~~. The method of claim 30 ~~31~~, wherein the silica ~~is Cab-o-Sil TS610~~ B1.

Ins B1

Sub a2

33. A disposable glucose test strip which produces a current indicative of the amount of glucose in a sample applied to the strip in response to an applied voltage, wherein the amount of current generated in response

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to a given amount of glucose varies by less than 10 percent over a temperature range from 20°C to 37°C.

Sub B2

34. A disposable glucose test strip which produces a current indicative of the amount of glucose in a sample applied to the strip in response to an applied voltage, wherein the amount of current generated in response to a given amount of glucose varies by less than 10 percent over a hematocrit range of 0 to 60 %.

35. A disposable glucose test strip which produces a current indicative of the amount of glucose in a sample applied to the strip in response to an applied voltage, wherein the amount of current generated in response to a given amount of glucose decays by less than 50% in the 5 seconds following peak current generation.